

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:

5 a first current mirror circuit combining an analog power source and a digital power source to receive a small amplitude signal and a constant-voltage input signal;

a second current mirror circuit for receiving a signal output from the first current mirror circuit and for level-converting the signal from analog power source to digital power source;

10 a first node provided in the first current mirror circuit;

a second node provided in the second current mirror circuit; and

an inverter circuit for receiving a signal output on the basis of voltage levels of the first node and the second node and for outputting a CMOS level signal,

15 wherein a CMOS level signal is generated from the small amplitude signal.

2. The semiconductor device according to claim 1, wherein:

20 the first current mirror circuit comprises a plurality of first PMOS transistors and a plurality of first NMOS transistors,

the second current mirror circuit comprises a pair of second PMOS transistors and a pair of second NMOS transistors,

the inverter circuit comprises a pair of third PMOS transistors and a pair of third NMOS transistors.

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3. The semiconductor device according to claim 2, wherein:

the number of the first PMOS transistors is six, and the number of the first NMOS transistors is four.

4. The semiconductor device according to claim 1, wherein:
the digital power source of the first current mirror circuit and the
digital power source of the inverter circuit are set at the same potential.

5 5. The semiconductor device according to claim 1, wherein:
a potential of an input signal to the inverter circuit coincides with a
logic threshold of an input of the inverter circuit.

10 6. The semiconductor device according to claim 5, wherein:
the potential of the input signal and the logic threshold are set to
coincide with each other so as to set a duty within a range of a
predetermined target value.

15 7. The semiconductor device according to claim 1, wherein:
the semiconductor device is a direct Rambus DRAM.